# Express Mail No. ET995221137US

FORM PTO-1390 (REV. 11-2000)	U.S. DEPARTMENT OF COM	MERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER			
TRANSMITTAL LETTER TO THE UNITED STATES MICROM7						
DESIGNATED/ELECTED OFFICE (DO/EO/US)  U.S. APPLICATION NO (If known, see 37 CFR 1.5						
CONCERNING A FILING UNDER 35 U.S.C. 371						
INTERNATIONAL AI	PPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED			
PCT/FR00		28 July 2000	10 September 1999			
TITLE OF INVENTIO		AL INSTRUMENT SUCH AS A	<u> </u>			
		AL REAMER AND METHOD FOR I	MAKING SAME			
APPLICANT(S) FOR I	BAD	OZ, Jean-Marie				
Applicant herewith sub	mits to the United Sta	tes Designated/Elected Office (DO/EO/US)	the following items and other information:			
1. This is a FIRS	T submission of items	concerning a filing under 35 U.S.C. 371.				
2. This is a SECO	OND or SUBSEQUEN	VT submission of items concerning a filing to	mder 35 U.S.C. 371.			
<ol> <li>This is an expression (5), (6), (6)</li> </ol>	ess request to begin na (9) and (21) indicated	tional examination procedures (35 U.S.C. 3 below.	71(f)). The submission must include			
		ation of 19 months from the priority date (A on as filed (35 U.S.C. 371(c)(2))	rticle 31).			
		on as filed (35 U.S.C. 371(c)(2)) only if not communicated by the Internation	nal Rureau)			
1 =	` .	the International Bureau.	····· ~ ······/·			
	•	cation was filed in the United States Receive	ing Office (RO/US).			
1		e International Application as filed (35 U.S.	- · · · ·			
1	ached hereto.	- morning in production as their (see 5.15.	(5,5,7,0,0)			
b. has b	=					
7. X Amendments to						
a. 🔲 are at	a. are attached hereto (required only if not communicated by the International Bureau).					
b. have						
c. have						
d. X have not been made and will not be made.						
8. An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).						
9. X An oath or decl	9. X An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).					
10. An English lanugage translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).						
Items 11 to 20 below concern document(s) or information included:						
11. An Information	on Disclosure Stateme	ent under 37 CFR 1.97 and 1.98.				
12. An assignmen	nt document for recor	ling. A separate cover sheet in compliance	with 37 CFR 3.28 and 3.31 is included.			
13. A FIRST pre	☐ A FIRST preliminary amendment.					
14. A SECOND	14. A SECOND or SUBSEQUENT preliminary amendment.					
15. A substitute s	15. A substitute specification.					
16. A change of I	16. A change of power of attorney and/or address letter.					
17. A computer-r	17. A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.					
18. A second cop	18. A second copy of the published international application under 35 U.S.C. 154(d)(4).					
19. A second cop	9. A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).					
20. X Other items of		wings (1 sheet)				
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U.S. APPLICATION NO. 16 Thomas are Excess 54 9 INTERNATIONAL APPLICATION NO PCT/FR00/02162					ROM7	
21. The following fees are submitted:  CALCULATIONS PTO USE OF						PTO USE ONLY
	L FEE (37 CFR 1.492 (a)					
Neither internation nor international se and International S	nal preliminary examinat earch fee (37 CFR 1.445) Search Report not prepare	ion fee (37 CFR 1.482) (a)(2)) paid to USPTO ed by the EPO or JPO				
International prelim	ninary examination fee (	37 CFR 1.482) not paid to epared by the EPO or JPC	)			
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International prelin but all claims did n	ninary examination fee (	37 CFR 1.482) paid to US PCT Article 33(1)-(4)	PTO			
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and all claims satis:	fied provisions of PCT A	urticle 33(1)-(4)		⊢		1
ENTE	R APPROPRIATE	BASIC FEE AMOU	UNT =	\$	890.00	ŀ
Surcharge of \$130.0 months from the ear	0 for furnishing the oath liest claimed priority dat	or declaration later than e (37 CFR 1.492(e)).	20 30	\$		
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$		·
Total claims	5 -20 =	0	x \$18.00	\$		
Independent claims	1 -3 =	0	x \$80.00	\$		
MULTIPLE DEPEN	DENT CLAIM(S) (if app		+ \$270.00	\$		
TA Applicant claim		OF ABOVE CALCU		\$	890.00	
Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.					445.00	
Droossing for a CS1	20 00 6 - 6 1-11 - 4 - 1	SU	BTOTAL =	\$	445.00	
Processing fee of \$130.00 for furnishing the English translation later than $\square$ 20 $\square$ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).						
TOTAL NATIONAL FEE =					445.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +					1.15.00	
TOTAL FEES ENCLOSED =					445.00	
					unt to be efunded:	\$
					charged:	\$
a. X A check in t	the amount of \$4	45.00 to cover the	above fees is enclos	ed.		
b. Please charge my Deposit Account No. in the amount of \$ to cover the above fees.  A duplicate copy of this sheet is enclosed.						
c. \( \square\) The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>03-2405</u> . A duplicate copy of this sheet is enclosed.						
d. Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card						
information should not be included on this form. Provide credit card information and authorization on PTO-2038.						
NOTE: Where an a 1.137 (a) or (b)) mu	appropriate time limit i st be filed and granted	under 37 CFR 1.494 or 1 to restore the application	.495 has not been m	et, a p	etition to reviv	e (37 CFR
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COHEN, Gary M., Esq.						
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Applicant:	BADOZ, Jean-Marie		Attorney's Ref.: MICROM7
Application No.: Filed:	(not yet known)		
For:	ROOT CANAL INSTRUMENT	SUCH AS A ROOT-CANAL	
	REAMER AND METHOD FOR	MAKING SAME	
	STATEMEN (37 C.F.R. §1.9(f)	T CLAIMING SMALL ENTITY S and §1.27(c)) - SMALL B	STATUS USINESS CONCERN
I hereby state t	hat I am		
[x]	the owner of the small an official of the small identified below:	business concern identif 1 business concern empow	ned below: ered to act on behalf of the concern
NAME OF SMALL BU		cro Mega, S.A.	
ADDRESS OF SMALL	BUSINESS CONCERN: 12	rue du Tunnel	
	<u>_+-</u>	25000 Besançon, France	
as defined in 13 Trademark Office	C.F.R. Part 121 for pur Questions related to s	poses of paying reduced ize standards for a small	qualifies as a small business concern fees to the United States Patent and business concern may be directed to: treet, S.W., Washington, D.C. 20416.
I hereby state business concern	hat rights under contra identified above with r	act or law have been con regard to the invention d	nveyed to and remain with the small escribed in:
[ ] [ ]	the specification filed the application identif the patent identified a		listed above.
as small entities would not qualify or by any concer	zation having rights in , and no rights to the i as an independent inven	the invention must file s invention are held by any tor under 37 C.F.R. §1.9( Fy as a small business co	n are not exclusive, each individual, eparate statements as to their status person, other than the inventor, who c) if that person made the invention, oncern under 37 C.F.R. §1.9(d), or a
Each person, con-	ern or organization hav	ing any rights in the in	vention is listed below:
[x]	no such person, concern		
NAME			
ADDRESS [ ] INDI	/IDUAL [ ] SM	MALL BUSINESS CONCERN	[ ] NONPROFIT ORGANIZATION
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[ ] INDI	/IDUAL [] SM	MALL BUSINESS CONCERN	[ ] NONPROFIT ORGANIZATION
Separate statement invention stating	ts are required from each their status as small o	ch named person, concern entities. (37 C.F.R. §1.	or organization having rights to the 27)
earliest of the i	of entitlement to small	entity status prior to p ance fee due after the da	notification of any change in status awing, or at the time of paying, the te on which status as a small entity
NAME OF PERSON SI	GNING: Alex	in GAGNEUR	
TITLE OF PERSON I	F OTHER THAN OWNER: Gene	eral Manager	
ADDRESS OF PERSON		rue du Tunnel	
	F-2:	5000 Besançon, France	

SIGNATURE Main Gagnen

DATE 14/9 hunge 2002

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JC13 Rec'd PCT/PTO 30 JAN 2002 Express Mail No. E7995221157US

# ROOT CANAL INSTRUMENT SUCH AS A ROOT-CANAL REAMER AND METHOD FOR MAKING SAME

5 The present invention relates to the field of the production of endodontic instruments for preparing dental canals and more particularly to the canal instruments of the dental reamer type which have a working cross section called the "blade" which 10 comprises three flutes forming three cutting lips.

Canal instruments which have a working cross section which comprises three flutes forming three cutting lips are already known in the prior art.

In particular, this type of instrument is known from the prior art French patent applications 96 04987 and 96 14347.

- 20 The instruments described in the aforementioned patent applications have a circular symmetry of the order of three or more depending on the number of cutting lips of the instrument.
- 25 Thus, when the instrument is used in rotation in a curved dental canal, the instrument follows the axis of the canal by virtue of the equilibrium of the forces applied to the instrument.
- 30 This type of instrument is satisfactory except when the canal cannot be assimilated to a hole of circular cross section. The reason is that in this latter case the forces applied during the preparation of the canal are no longer equilibrated and the trajectory of the
- instrument risks deviating from the axis of the dental canal. This deviation can have very serious consequences since it can lead to the formation of an incorrect path or even a perforation of the canal.

The aim of the present invention is to remedy the disadvantages of the prior art by making available an instrument whose blade makes it possible to eliminate this risk. This aim is achieved by deliberately breaking the circular symmetry of the instrument in such a way that, as the resistance of the blade to bending is no longer the same in all directions, the point of the instrument is made to seek out the dental canal and to penetrate into the latter naturally.

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Thus, the canal instrument according to the invention has a working cross section which comprises three flutes forming three cutting lips, and it is characterized in that the three cutting lips are situated at the vertices of a triangle, not an equilateral one, but an isosceles one.

The present invention also relates to different methods for production of the canal instrument according to the invention.

The invention will be better understood from the following description of an illustrative embodiment which is given as a nonlimiting example, reference being made to the attached figures, in which:

Figure 1 illustrates a cross sectional view of a canal instrument of the prior art, where the three cutting lips are situated at the vertices of an equilateral triangle;

Figure 2 illustrates a cross sectional view of a canal instrument according to the invention obtained by a first method of production;

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Figure 3 illustrates a cross sectional view of a canal instrument according to the invention obtained by a second method of production; and

Figure 4 illustrates a cross sectional view of a canal instrument according to the invention obtained by a third method of production.

5 The canal instrument (1) according to the invention is a canal instrument of the dental reamer type having a working cross section (10) which comprises three flutes (20, 21, 22) forming three cutting lips (30, 31, 32). It is characterized in that the three cutting lips (30, 31, 32) are situated at the vertices of an isosceles triangle.

Like all canal instruments of this type, the instrument according to the invention has a working cross section (10), also called the "blade", whose active part is obtained by cutting and has a conical shape also obtained by cutting. The conical shape is obtained in most cases by progressively moving the cutting wheel away from the axis of the instrument as one proceeds away from the point of the instrument.

A canal instrument (0) of the prior art, obtained by machining three identical flutes (20, 21, 22) forming three cutting lips (30, 31, 32) arranged at 120°, is illustrated in Figure 1.

The present invention also relates to different methods for production of the canal instrument according to the invention.

A first possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations at 120°, then in producing the third flute (22) by performing a third machining operation at a greater depth than the first two, as is illustrated in Figure 2.

It is also possible to make the depth of the third

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flute (22) such that it is greater than that of the first two flutes (20, 21) at the point of the working cross section (10) of the instrument and then becomes identical to the depth of the first two flutes (20, 21).

The depth of the third flute (22) can become identical to that of the first two flutes (20, 21) either at the end of the working cross section (10) or before the end of the working cross section (10).

A second possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations, at an angle greater than 120°, then in producing the third flute (22) by performing a third machining operation complementing the first two, as is illustrated in Figure 3.

20 A third possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations, at an angle less than 120°, then in producing the third flute (22) by performing a third machining operation complementing the first two, as is illustrated in Figure 4.

#### CLAIMS

Canal instrument (1) of the dental reamer type, 1. having a working cross section (10)comprises three flutes (20, 21, 22) forming three cutting lips (30, 31, 32), characterized in that the three cutting lips (30, 31, 32) are situated at the vertices of an isosceles triangle.

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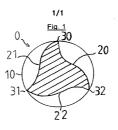
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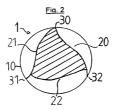
- Method for production of a canal instrument (1) 2. according to Claim 1, characterized in that two flutes (20, 21) are produced by performing two identical successive machining operations, 120°, then in that the third flute produced by performing a third machining operation at a greater depth than the first two.
- Method for production of a canal instrument (1) 3. according to Claim 2, characterized in that the depth of the third flute (22) is greater than that of the first two flutes (20, 21) at the point of the working cross section (10) of the instrument and then becomes identical to the depth of the first two flutes (20, 21). 25
  - Method for production of a canal instrument (1) according to Claim 1, characterized in that two flutes (20, 21) are produced by performing two identical successive machining operations, at an angle greater than 120°, then in that the third flute (22) is produced by performing a third machining operation complementing the first two.
- Method for production of a canal instrument (1) 35 according to Claim 1, characterized in that two flutes (20, 21) are produced by performing two identical successive machining operations, at an angle less than 120°, then in that the third flute

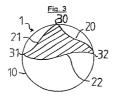
(22) is produced by performing a third machining operation complementing the first two.

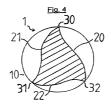
## ABSTRACT

A root-canal instrument (1), such as a root-canal reamer, includes a working section (10) having three flutes (20, 21, 22) forming three cutting lips (30, 31, 32). The three cutting lips (30, 31, 32) are located at the apices of an isosceles triangle. Also described are various methods for making the root-canal instrument (1).









COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY

\_(Includes Reference to PCT International Applications)

Attorney's Reference: MICROM7

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, if irst and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: ROOT CANAL INSTRUMENT SUCH AS A ROOT-CANAL REARIER AND METHOD FOR MAKING SAME, the specification of which (check only one item below):

[ ]	is attached hereto.	
[ ]	was filed as United States Patent	
	Application No.	
	on	
	and was amended	
	on	(if applicable).
[X]	was filed as PCT International Application	
	Number PCT/FR00/02162	
	on _28 July 2000	
	and was amended under PCT Article 19	
	on	(if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56.

I hareby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 35 U.S.C. 355(b) of any foreign application(e) for patent or inventor's contributar, or under 35 U.S.C. 355(a) of any PCT international application which depicted at least on country other than the United States of America, listed below have also identified below any foreign application for patent or inventor's certificate, or any PCT international application having a filting date before that of the application on which priority is claimed.

#### PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. §119
France	99/11448	10 September 1999	[X] YES [ ] NO
			[] YES [] NO
			[] YES [] NO
			[ ] YES [ ] NO

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or under 35 U.S.C. 355() of any PCT international application designating the United States of America, that 19,4 are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of 33 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

	APPLICATIONS OR PCT ER 35 U.S.C. §120:	INTERNATIONAL APPLICATIONS	S DESIGNATING	THE U.S. F	OR
	U.S. APPLICATI	ONS	ST	ATUS (Check	k one)
U.S. APPLICATIO	N NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT	APPLICATIONS DESIGN	MATING THE U.S.			
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (1f any)			
			1		

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

### GARY M. COHEN, ESQ. - Reg. No. 28,834

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Full Name of Inventor 2	Family Name	First Given Name	Second Given Name
Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
Post Office Address	Post Office Address	City	State/Zip Code/Country

I horeby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1  fear-House Back	Signature of Inventor 2
Date	Date